

What Is Claimed Is:

1.           A device for the slip control of a clutch in a clutch assembly that comprises a clutch actuation assembly made of a transmitter cylinder/piston assembly and a pickup cylinder/piston assembly, which are hydraulically joined to each other via an opening in the wall of the transmitter cylinder, the opening being joined to a compensating reservoir that contains the same hydraulic fluid as in the cylinders of the assemblies, having means for the detection of the rotational speed of a clutch input and output shaft, a coupling component, which is connected at one end to the piston of the pickup cylinder of the assembly and at the other end to a moving clutch part of the clutch, wherein a drive device comprises an electronically programmable controller unit and an electric motor having a transmission that is mechanically joined to the piston of the transmitter cylinder and means feed the detected rotational speeds into the controller unit that drives the electric motor.
2.           The device as described in Claim 1, wherein the transmission converts a rotary movement induced by the electric motor via a shaft into a linear movement at two different speeds with which the piston can be impinged.
3.           The device as described in Claim 1, wherein the piston is positionable in areas of the transmitter cylinder and there is a modulation limit in the transmitter cylinder, which is disposed in front of the opening in the direction of the piston movement for the engagement of the clutch.
4.           The device as described in Claim 2, wherein the speed of the piston in its movement in the direction toward crossing over the modulation limit is low and the speed of the piston movement increases to its maximum value after the piston has passed the opening in the direction.
5.           The device as described in Claim 3, wherein in the first area the piston picks up a position between the opening and a clutch-side end in the transmitter cylinder so that the compensating reservoir is connected to a controller-side secondary chamber of the transmitter cylinder.
6.           The device as described in Claim 3, wherein the second area covers the opening and the piston positioned within the second area closes off the opening.

7. The device as recited in Claim 3, wherein the third area is disposed in the direction toward the opening and in front of a control-side end of the transmitter cylinder and, when the piston is positioned in the third area, the compensating reservoir is connected to a primary area of the transmitter cylinder.

5 8. The device as described in Claim 3, wherein the modulation limit has a distance of 1.4 to 4.2 mm from the clutch-side edge of the opening.

9. The device as described in Claim 3, wherein there is a seal in the piston that has a width of 0.2 to 1 mm and the safety distance of the seal from the opening, after the piston is driven past said opening, is at least equal to the seal width.

10 10. A method for slip control of a clutch that is disposed in the drive train of a motor vehicle and comprises a transmitter cylinder/piston assembly having a transmitter cylinder in which a controllable piston is longitudinally displaceable, its position in the transmitter cylinder being detected, the piston is displaced in the cylinder in a first direction to engage the clutch and in a second, opposite direction to disengage the clutch, and the rotational speeds of an input shaft and an output shaft of the clutch are detected, wherein a pre-selectable modulation limit of the piston is determined at which a seal of the piston on the side facing a primary chamber is positioned outside of an opening for the feeding or draining of hydraulic fluid inside or outside the transmitter cylinder and does not touch the edge of the opening, when the piston reaches the modulation limit, there is a detection of whether the difference between the rotational speed of the input shaft and the output shaft is greater than or equal to a pre-determinable value, and, when there is a difference of rotational speeds not equal to zero, the piston is moved at a first pre-determinable low speed into a first position in which the seal on the side facing toward a secondary chamber is positioned outside of the opening and then is moved at a second greater pre-determinable speed further in the first direction.

11. The method as described in Claim 10, wherein the seal seals off the primary chamber for the hydraulic fluid from the secondary chamber and the piston is always positioned in such a manner that the seal does not come to rest in the opening.

12. The method as described in Claim 10, wherein the first speed is selected to be low, preferably lower than 5 mm/s and the second speed to be high, preferably higher than 1 mm/s.
13. The method as described in Claim 10, wherein the piston is moved at the  
5 second speed up to the control-side end of the cylinder.
14. The method as described in Claim 10, wherein a distance of 1.4 to 4.2 mm from the edge of the opening is set for the modulation limit.
15. The method as described in Claim 10, wherein, after the detection of a driver's intention to shift or of a torque requirement, a change in the direction of the  
10 piston after the modulation limit is crossed is carried out only after the piston and/or the seal have already run past the opening.
16. The method as described in Claim 10, wherein a programmable electronic control unit that has inputs that can be connected to means for the detection of the rotational speeds of the input and output shafts of the transmission and/or of the  
15 intended and/or engaged gear of the transmission and outputs by which control signals are routed to an electric motor that operates a transmission, and the control unit is programmed using software and is wired to the slip control device.
17. The method as described in Claim 16, wherein the position of the piston in the transmitter cylinder is detected via the angle position of the transmission.

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